Claim 1. (Currently Amended) A method for visual-based recognition of an object, said method comprising:

receiving digital depth data for at least a pixel of an image of an object, which is not required to be inside of a subject, said depth data comprising information relating to a distance from a visual sensor to a portion of said object shown at said pixel, said visual sensor comprising an emitter and sensor of light, wherein said light is selected from the group of electromagnetic radiation consisting of visible light, infrared light, and ultraviolet light and wherein said receiving of said depth data does not require special behavior from one of said object and said subject;

generating a plan-view image based in part on said depth data, wherein said generating includes generating said plan-view image as if said object were viewed from above and wherein generating other view images based on different orientations of said object other than from above is not required;

extracting a plan-view template from said plan-view image, wherein at least a portion of said plan-view image is transformed; and

processing said plan-view template at a classifier, that is executing on a computer system, to assign a class to said plan-view template, wherein said classifier is trained to make a decision according to pre-configured parameters determined at least in part based on said class of said plan-view template;

wherein said generating said plan-view image further includes generating a three-dimensional point cloud of a subset of pixels based on said depth data, partitioning said three-dimensional point cloud into a plurality of vertically oriented bins and a plurality of horizontally oriented slices, mapping at least a portion of points of said plurality of vertically oriented bins and at least one horizontally oriented slice into at least one said plan-view image, wherein said plan-view image is two-dimensional;

wherein said extracting said plan-view template from said plan-view image further includes extracting said plan-view template from at least any two plan-view images.

Claim 5. (Currently Amended) The method as recited in Claim 1 ~~wherein said generating said plan-view image further comprises: generating a three-dimensional point cloud of a subset of pixels based on said depth data,~~ wherein a point of said three-dimensional point cloud comprises a three-dimensional coordinate~~; partitioning said three-dimensional point cloud into a plurality of vertically oriented bins; and~~ . wherein said mapping ~~at least a portion of points of said plurality of vertically oriented bins into at least one said plan-view image~~ is based on said three-dimensional coordinates, and wherein said plan-view image is a two-dimensional representation of said three-dimensional point cloud comprising at least one pixel corresponding to at least one vertically oriented bin of said plurality of vertically oriented bins.

Claim 7. (Canceled)

Claim 8. (Currently Amended) The method as recited in <u>Claim 5</u> ~~Claim 7 wherein said extracting a plan-view template from said plan-view image further comprises extracting a plan view template from at least two plan-view images corresponding to different slices of said plurality of slices,~~ wherein said plan-view template comprises a transformation of at least said portion of said plan-view images, such that said plan-view template is processed at said classifier.

Claim 23. (Currently Amended) A visual-based recognition system comprising:

a visual sensor for capturing depth data for at least a pixel of an image of an object, which is not required to be inside of a subject, said depth data comprising information relating to a distance from said visual sensor to a portion of said object visible at said pixel, said visual sensor comprising an emitter and sensor of light, wherein said light is selected from the group of electromagnetic radiation consisting of visible light, infrared light, and ultraviolet light and wherein said capturing of said depth data does not require special behavior from one of said object and said subject;

a plan-view image generator for generating a plan-view image based on said depth data, wherein said generating of said plan-view image includes generating said plan-view image as if said object were viewed from above and wherein generating other view images based on different orientations of said object other than from above is not required;

a plan-view template generator for generating a plan-view template based on said plan-view image; and

a classifier for making a decision concerning recognition of said object, wherein said classifier is trained to make said decision according to pre-configured parameters that were determined at least in part based on a class assigned to said plan-view template;

wherein said generating said plan-view image further includes generating a three-dimensional point cloud of a subset of pixels based on said depth data, partitioning said three-dimensional point cloud into a plurality of vertically oriented bins and a plurality of horizontally oriented slices, mapping at least a portion of points of said plurality of vertically oriented bins and at least one horizontally oriented slice into at least one said plan-view image, wherein said plan-view image is two-dimensional;

wherein said generating said plan-view template based on said plan-view image further includes extracting said plan-view template from at least any two plan-view images.

Claim 29. (Currently Amended) The visual-based recognition system as recited in Claim 23 ~~wherein said plan-view image generator is operable to generate a three-dimensional point cloud based on said depth data,~~ wherein a point of said three-dimensional point cloud comprises a three-dimensional coordinate.

Claim 30. (Canceled)

Claim 31. (Currently Amended) The visual-based recognition system as recited in ~~Claim 29~~ Claim 29 ~~Claim 30 wherein said plan-view template generator is operable to extract a plan-view template from at least two plan-view images corresponding to different slices of said plurality of slices,~~ wherein said plan-view template comprises a transformation of at least said portion of said plan-view images, such that said plan-view template is processed at said classifier.

Claim 32. (Currently Amended) A method for visual-based recognition of an object representative in an image, said method comprising:

generating a three-dimensional point cloud based on digital depth data for at least a pixel of an image of said object, which is not required to be inside of a subject, said depth data comprising information relating to a distance from a visual sensor to a portion of said object visible at said pixel, said visual sensor comprising an emitter and sensor of light, wherein said light is selected from the group of electromagnetic radiation consisting of visible light, infrared light, and ultraviolet light, said three-dimensional point cloud representing a foreground surface visible to said visual sensor and wherein a pixel of said three-dimensional point cloud comprises a three-dimensional coordinate and wherein said generating of said three-dimensional point cloud does not require special behavior from one of said object and said subject;

partitioning said three-dimensional point cloud into a plurality of vertically oriented bins and a plurality of horizontally oriented slices;

mapping at least a portion of points of said vertically oriented bins and at least one horizontally oriented slice into at least one said plan-view image based on said three-dimensional coordinates, wherein said plan-view image is a two-dimensional representation of said three-dimensional point cloud comprising at least one pixel corresponding to at least one vertically oriented bin of said plurality of vertically oriented bins, wherein said mapping includes generating said plan-view image as if said object were viewed from above; and

processing said plan-view image at a classifier, that is executing on a computer system, wherein said classifier is trained to make a decision according

to pre-configured parameters and wherein said pre-configured parameters were determined based at least in part on a class assigned to a plan-view template that was extracted from <u>at least any two plan-view images</u> ~~said plan-view image~~ by transforming at least a portion of said <u>at least any two</u> plan-view image<u>s</u>, said classifier does not require other view images based on different orientations than from above of said object in order to make said decision.

Claim 35 (Canceled)

Claim 36. (Canceled)

Claim 37. (Currently Amended) The method as recited in <u>Claim 32</u> ~~Claim 36~~ wherein said plan view template comprises a transformation of at least said portion of said plan view image<u>s</u>, such that said plan-view template is processed at said classifier.

Claim 40. (Currently Amended) The method as recited in <u>Claim 32</u> ~~Claim 36~~ ~~further comprising extracting a plan-view template from at least two plan-view images corresponding to different slices of said plurality of slices,~~ wherein said plan view template comprises a transformation of at least said portion of said plan view images, such that said plan-view template is processed at said classifier.